

IN THE CLAIMS

Claims 1-2. (Cancelled).

Claim 3. (Previously Presented) A friction transmission unit having an input member and an output member in rolling contact with the input member, for transmitting rotation of the input member to the output member by means of friction force,

wherein,

a function indicating a gap in a direction (z) which is formed between the input member and the output member when the input member and the output member are assumed to contact each other at a point, the gap (z) being on a plane perpendicular to a vector indicating friction force caused between the input member and the output member, is expressed as

$$z = a \cdot \sinh(bx^2)$$

(x) being a distance from the point at which the input member is assumed to contact the output member along a tangent of the input member passing through the point, and (a) and (b) being constants.

Claim 4. (Previously Presented) A friction transmission unit having an input member and an output member in rolling contact with the input member, for transmitting rotation of the input member to the output member by means of friction force,

wherein,

a function indicating a gap in a direction (z) which is formed between the input

Application No. 10/067,903
Reply to Office Action of February 8, 2005

member and the output member when the input member and the output member are assumed to contact each other at a point, the gap (z) being on a plane perpendicular to a vector indicating friction force caused between the input member and the output member, is expressed as

$$z = C_4 x^4 + C_3 x^3 + C_2 x^2$$

$$\text{wherein } C_4 = (-0.00002n^4 + 0.0017n^3 - 0.058n^2 + 0.89n - 2.113) \times C_0$$

$$C_3 = (-0.0018n^3 + 0.064n^2 - 1.0754n + 3.7603) \times C_0$$

$$C_2 = (1.894n^{-0.574} - C_4 - C_3) \times C_0$$

$$C_0 = 2aP_{\max}/\pi E$$

$$3 < n < 6 \text{ (full-troidal)}$$

$$3 < n < 10 \text{ (half-troidal)}$$

(x) being a distance from the point at which the input member is assumed to contact the output member along a tangent passing through the point.

Claims 5-12. (Cancelled).

Claim 13. (Previously Presented) The friction transmission unit according to claim 3, wherein the point of contact between the input member and the output member is a point between the input member and the output member where a curvature radius of at least one of the input member and the output member in a direction along a vector indicating friction force between the input member and the output member is minimized.

Application No. 10/067,903

Reply to Office Action of February 8, 2005

Claim 14. (Previously Presented) The friction transmission unit according to claim 13, wherein a contact surface of one of the input member and the output member is a toroidal surface, and

the point of contact is innermost in a radius direction of rotation within a range wherein the other member contacts the contact surface which is the toroidal surface.